EXECUTIVE SUMMARY

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION & TECHNOLOGY)
PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE (ACQUISITION & TECHNOLOGY)

FROM: DIRECTOR, TEST, SYSTEMS ENGINEERING & EVALUATION
Prepared by: Larry Paulson/SESO/681-4535/xx March 99

SUBJECT: FY 1998 DoD Value Engineering (VE) Report

PURPOSE: ACTION--Forward subject report to (1) OMB, and (2) the Services and Defense Agencies with USD(A&T) feedback on VE performance.

DISCUSSION:

- OMB Circular A-131 requires an annual VE report. Subject report was developed by the DoD VE Manager using Component inputs (TAB C).
- The 1998 VE program has a $315M (45%) increase in combined total VE savings over the 1997 results. The Navy VE program accounted for $270M of the combined VE savings increase, most of which was from their AAAV program office. The report shows an increase in MDAP VE activity to 23% from 22%. However, there is a large disparity in application and resulting savings across the Services. The Army accounted for 45% of savings versus 5.5% for the Air Force.
- Of the dollars that VE can readily be applied (e.g., O&M, PROC, MILCOM, and FamHouse), DLA and Army saved 1.93% and 1.42% of those dollars. The strategic VE goal of saving one percent of Total Obligation Authority (TOA) (FY 1996-97 DoD VE Strategic Plan, 13 Aug 96) was not met, however, Army achieved 0.73% of TOA. The Navy and Air Force saved 0.42% and 0.07% of their TOA.
- One good year does not make a turn-around, however, this 45% increase is significant since DoD VE savings had a declining trend since 1987. A continued management emphasis on improving VE results should make this turn-around secure.

COORDINATION: Subject report is a consolidation and analysis of Service and Agency inputs that were previously coordinated and approved by respective Service or Agency.

RECOMMENDATION: Sign letter to OMB (TAB A) and sign memorandum to DoD Acquisition Executives and Defense Agency Directors (TAB B).

Mr. Steven Kelman
Administrator
Office of Federal Procurement Policy
Office of Management and Budget
Washington, DC 20503

Dear Mr. Kelman:

Our Value Engineering (VE) Report for Fiscal Year (FY) 1998 is enclosed. The Military Services and Defense Agencies reported VE benefits of $914 million from in-house actions and another $109 million from contractor-initiated VE change proposals. These combined totals are a 45 percent increase over FY 1997. During FY 1998, we emphasized the new Federal Acquisition Regulation deviation that increased the contractor incentives by increasing the maximum sharing period to five years, increasing the maximum acquisition sharing rate to 75 percent, increasing the maximum collateral sharing rate to 100 percent, and by allowing VE proposals initiated during development to reap savings during production. We encourage our program managers and contractors to apply the VE methodology to maximum advantage.

The VE Program Manager for the Department of Defense is:

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Questions should be addressed directly to Mr. Paulson.

Sincerely,

Enclosure

MEMORANDUM FOR: SEE DISTRIBUTION

Subject: Fiscal Year (FY) 1998 DoD Value Engineering (VE) Report

The subject VE annual report is attached for your information and use. The Military Services and Defense Agencies reported VE benefits of $914 million from in-house actions and another $109 million from contractor-initiated VE change proposals (VECPs). While these combined totals are a 45 percent increase over FY 1997, there remains a large disparity across the Services. Clearly we are missing opportunities for VE savings that can help us achieve our force modernization requirements. I encourage you to use the VE Federal Acquisition Regulation deviation that improves the contractor incentives by increasing the maximum sharing period to five years, increasing the maximum acquisition sharing rate to 75 percent, increasing the maximum collateral sharing rate to 100 percent, and by allowing VE proposals initiated during development to reap savings during production.

I encourage the use of VE independently and as a program management tool to reduce costs. I would like each of you to apply the VE methodology to maximum advantage on all programs. I hope to achieve the strategic goal of VE savings exceeding one percent of Total Obligation Authority—I established this goal in the FY 1996-97 DoD VE Strategic Plan.

Questions should be referred to the DoD VE Program Manager, Larry Paulson at (703) 681-4535.

Attachment:
As stated

DISTRIBUTION:

Assistant Secretary of the Army (Research, Development & Acquisition)
Assistant Secretary of the Navy (Research, Development & Acquisition)
Assistant Secretary of the Air Force (Acquisition)
Director, Defense Logistics Agency
Director, Defense Commissary Agency
Director, Defense Contract Audit Agency
Director, Defense Finance & Accounting Service
Director, Defense Information Systems Agency
Director, Defense Intelligence Agency
Director, Defense Investigative Service
Director, Defense Legal Services Agency
Director, Defense Mapping Agency
Director, Defense Nuclear Agency
Director, Defense Security Assistance Agency
Director, National Security Agency
Director, On-Site Inspection Agency
Director, Ballistic Missile Defense Organization
Commander, Defense Contract Management Command

FISCAL YEAR 1998 VALUE ENGINEERING REPORT:

Summary of Accomplishments

	Army	Navy	Air Force	BMDO	DLA *	DoD Total
VE Potential						
O&M TOA ($M)	22,923.0	25,891.0	25,131.0		6,295.4	94,248.0
PROC TOA ($M)	7,342.0	19,508.0	15,328.0			45,093.0
MILCON TOA ($M)	1,353.0	1,705.0	1,539.0			6,089.0
FamHous TOA ($M)	1,285.0	1,378.0	1,103.0			3,766.0
SubTotal TOA ($M)	32,903.0	48,482.0	43,101.0		6,295.4	149,196.0
VE $ /Sub TOA $ (%)	1.42%	0.71%	0.13%		1.93%	0.69%
Total TOA ($M)	64,019.0	81,935.0	76,512.0			259,111.0
VE $ /Total TOA $ (%)	0.73%	0.42%	0.07%		1.93%	0.39%
Program Participation						
# of MDAPs	23	25	27	6		81
MDAPs w/VE	8	7	1	2		18
% MDAPS w/VE	35%	28%	6%	33%		22%
In-House (VEPs)						
Studies/Workshops	158	0	0	19	5,699	5,876
Received	281	1828	33	8	5,699	7,849
Approved	285	287	34	8	3,648	4,262
Avg days to process	211	28	0	0	277	256
Net Savings ($M)	430.86	325.13	4.78	33.28	119.75	913.80
PROC ($M)	430.86	310.66	4.78	13.88	105.75	865.93
LCC ($M)	0.00	14.47	0.00	19.40	14.00	47.87
Investment ($M)	18.1	22.7	0.0	1.0	9.2	50.98
ROI (xx:1)	25	15.3	295.4	33.9	14.0	17.9
Contractor (VECPs)						
# VEPR clauses	5	0	8	5	0	18
Received	100	91	1	1	47	240
Approved	78	61	8	0	20	167
Avg days to process	274	108	63	0	345	212
# > 45 days to process	8	47	1	0	23	79
Net Savings ($M)	35.10	20.22	51.33	0.00	2.06	108.71
PROC ($M)	35.10	20.18	51.33	0.00	2.06	108.66
LCC ($M)	0.00	0.05	0.00	0.00	0.00	0.05
Investment ($M)	1.74	2.99	18.15	0.00	0.10	22.98
ROI (xx:1)	21.2	7.8	3.8		21	4.7
Total						
Net Savings ($M)	466.0	345.4	56.1	33.3	121.8	1022.5
PROC ($M)	466.0	330.8	56.1	13.9	107.8	974.6
LCC ($M)	0.0	14.5	0.0	19.4	14.0	47.9
Investment ($M)	19.8	28.8	18.2	1.0	9.3	77.1
ROI (xx:1)	24.5	13.0	4.1	33.9	14.1	13.3
Manpower						
Full-time	43	3	1	2	111	160
Other support (man-years)	31.1	29.3	1.9	20.9	4.0	87.2
Total	74.1	32.3	2.9	22.9	115.0	247.2
Training						
PAVE	209	50	8	0	105	372
CAVE	81	0	0	0	0	81
Orientation <40hrs	684	146	1	10	245	1,086
Exec Seminar 2-4hrs	252	0	241	7	0	500

* Defense Working Capital Obligation Authority (Materiel Obligation)

Navy

In FY 98, NAVSUP witnessed increased VECP use by the V-22 program. The V-22 Program Manager received 4 formal VECPs and 2 preliminary Value Analyses for consideration. The V-22 Program Office established an Integrated Product Team (IPT) for VECP assessment. The Program Manager also implemented a VECP checklist and a system flow chart with timelines to monitor VE activity in the Program Office. The DON received a VECP that was approved for the BQM-34E target, providing a major system upgrade with substantial life cycle savings and target performance growth. Also approved, was a VECP from Orbital Sciences on the Digital Data Set, ASQ-215. This proposal introduced PCMIA technology in the Data Transfer Module, (DTM) and allows for memory growth, while achieving a 13% cost reduction to the DTM.

The SUPSHIP Newport News Contractor submitted a VECP to replace the locking mechanisms with a simplified actuator for the Hanger Division and Elevator Door Locking Mechanism. The proposal reduces the number of parts and decreases the adjustment and replacement of many electrical components. NAVSEA approved the change and SUPSHIP Newport News is preparing a Field Modification Request to implement the change.

Current ship specifications call for MIL-I-631 sleeving for conductor identification. The method is extremely labor intensive and requires the use of outdated machinery prone to frequent breakdowns. The machinery involved is an electro-mechanical hot stamp machine that does not accept personal computer generated data sets. A SUPSHIP Newport News VECP allows the use of hot shrinkage tubing which can be stamped using commercial off-the-shelf printers that can accept data from personal computers. NAVSEA approved the change and SUPSHIP Newport News is preparing a Field Modification Request to implement the change.

The AN/SPS-49 radar system on board the CVN 76 is the only electronic system on board that using seawater as a cooling agent in CuNi piping. All other electronic systems on board use chilled water as a coolant. The seawater is extremely corrosive in the CuNi piping and typically requires replacement during ship availabilities. The SUPSHIP Newport News contractor evaluated the size of the ship's chilled water plant capacity and found that it could handle providing chilled water to the AN/SPS-49 radar. NAVSEA approved the change and SUPSHIP Newport News is preparing a Field Modification Request to implement the change.

The Universal Battery Charger/Analyzer development was submitted as an LECP under the Navy Boss III and DLA $AVE programs. The initiative is in the second year of an expected three year development. The primary sponsor is the DLA $AVE program with a total $AVE investment of $6.3 Million. The Navy SHARP program is augmenting the effort with up to $3.8 Million for riskier portions of the task. Several contractors are teaming with the Crane Division to develop configurations of COTS

hardware and software required to facilitate introduction to the fleet. Savings will not be seen until the fifth year after the beginning of investment. The projected yearly saving is expected to be $35 Million per year, with an ROI of 22 to 1 in 10 years.

NAVICP-Philadelphia submitted a VECP by Therm Incorporated for the TF30 first stage turbine rotor blade. Therm Inc. recommended eliminating the requirement for the measurement and marking of the critical length that is no longer used. The proposed change would have no change on schedule and producibility. This VECP was approved with a projected net saving of $48,000 to the government and the contractor.

During FY98, FOSSAC's Price Fighter Department performed analyses on 2,349 items ranging from routine spares to complex repairables and other weapons systems components. The results of these analyses have realized actual savings of $77.8M. Request for technical assistance in the procurement of repairables by conventional methods and direct vendor delivery continue to grow. The organization plays a major role in determining the Navy's cost to maintain the systems and evaluate the contractor's proposed cost to maintain the same system as well as providing negotiation assistance. The Price Challenge Hotline Program responded to 3,105 hotline calls resulting in cost avoidance of $15.9M and awarded challengers $31.0K in cash awards. In summary, Price Fighter Department analyzed or responded to 5,454 items/challenges, with a documented savings/cost avoidance of $93.7M.

The NSFS Program PEO(TSC) PMS 429 has established a VE IPT structure consisting of Contractors, the Sponsor, and Program Office representatives. Under the IPT, value engineering proposals are submitted, reviewed and approved or disapproved, and are reported as integrated in-house and contractor- generated VE proposals. All of the value engineering efforts have been, or will be, incorporated into PMS429’s ongoing Total Ownership Cost (TOC) Reduction plans. Raytheon has committed to share the developmental costs for NSFS PMS429’s Extended Range Guided Munition (ERGM) Program, with a share of 47.5%.\

The DDG 51 Class program has an established Affordability Cost Candidate (ACC) Steering Committee, composed of the shipbuilders, Bath Iron Works and Ingalls Shipbuilding, Inc., the Supervisors of Shipbuilding, the NAVSEA technical community, and the program office. The ACC Committee meets monthly to review Affordability Cost Candidates (ACCs) and to determine the approved ACC’s implementation strategy. For the AEGIS ACC program, the DDG 51 Program funded two Shipbuilder Special Studies, one at each shipbuilder (BIW and Ingalls). DDG 51 Class PMS400, under its PEO(TSC) AEGIS Destroyer Affordability Cost Candidate Program, has received 13 in-house VEP-equivalent change vehicles and approved 11 and received 28 contractor-generated VECP-equivalent change vehicles and approved 11, for a $22.4M savings

The DDG 51 Class program PMS400D established a Life Cycle Cost (LCC) Reduction program. The LCC program focuses Navy, shipbuilder, and industry

resources on the identification and implementation of change ideas that will result in a reduction of Total Ownership Cost (TOR). The shipbuilders are each funded through a Shipbuilder Special Study for the TOC effort. In addition, the FY98-FY01 DDG 51 Class shipbuilding contracts incentivize each shipbuilder to pursue LCC savings.

The DDG 51 Class program established a Common Process Team (CPT) to capitalize on each yard's experience by sharing ideas on similar or identical construction techniques or tasks associated with the design, construction, activation, and life cycle support of the ships. Such common processes can be developed from the least costly process at each yard to reduce life cycle costs.

The PMS422 STANDARD Missile project is the redesign of Plate 3A AEGIS Transceiver implemented into SM-2 Block IIIB and Block IV. This will result in savings of $19.4M over the FYDP. PMS422 STANDARD Missile project received and approved one VEP; it received one VECP that is currently being negotiated.

The Naval Surface Fire Support (NSFS) PEO(TSC) PMS429 VE projects are the change-out of fiber optic gyro base Inertial Measurement Units (IMUs) with silicon/micro electrical mechanical (MEM)-based IMUs and the replacement of the existing GPS receiver with a SAASM GPS receiver, for a savings to the Government of $174M. PMS429 has approved five out of the five VE proposals submitted.

The PEO(TSC) PMS465 Cooperative Engagement Capability (CEC) program VE project is the CEC Training Adjunct (CTA) software that is being rehosted into the BFTT Architecture, eliminating the need for CTA box and processors from the CEC architecture. The processors are added to the existing LAU in the BFTT architecture to support CTA software. The CTA rehost cuts procurement and installation costs in half for a savings to the government of $7.7M. One in-house generated VE was submitted and approved (CTA Rehost) and one contractor-generated VECP is under investigation for approval.

Defense Logistics Agency

VEPs results:

Lube Oil Pump, NSN 4320-01-061-0771. The lube oil pump is a component of the electric power generator systems used on Navy Spruance and Kidd Class Destroyers. The original manufacturer had gone out of business; no other manufacturers existed and the technical data was not available. The Navy Engineering Support Activity requested assistance from the Defense Supply Center, Columbus (DSCC) to reverse engineer the pump since cost of generator replacement is $170,000. The item was reverse engineered, and the drawings were produced and prototypes developed. Prototypes were delivered to the USS Comte De Grasse, for validation and to alleviate a Casualty Report condition. System parameters were monitored and the prototype functioned as intended. The ships port engineering authorized production and fleet installation. The project was an exemplary example of Navy and DSCC personnel focusing their talents to achieve operational readiness in a uniquely effective manner. Government savings realized = $10,665,095.

Ultrasonic Cleaner, NSN 4940-01-182-9279. In 1997, Fort Campbell KY ordered 100 ultrasonic cleaners for direct shipment. Subject item is a pump with filter and heater last purchased in 1992 for nearly $40,000 per unit. Due to the high dollar value of the buy and excessive quantity, the equipment specialist contacted the customer to verify demands. After describing the item, the customer realized the wrong item had been ordered and submitted a request to cancel the requisition. Government cost avoidance realized = $2,204,370.

Fresh fruits and vegetables. For large quantities, produce is shipped directly to the customer (Direct Vendor Delivery) eliminating the cold storage warehouse cost. This project was started in FY 97 and realized a second year Government savings of $1,033.923.

Electron Tube, NSN 5960-00-272-9185. Hughes Display was removed from the Qualified Products List (QPL) resulting in no sources. Hughes Lexington proposed first article testing and was added to the QPL as the only qualified source. The military controlling specification was obtained by a value analyst and given to manufacturers of similar type electron tubes. Thomas Electronics was the only manufacturer to show interest in becoming a QPL source and subsequently received QPL approval. Savings to the Government = $801,951.

Sleeve Shaft, NSN 4340-01-171-1870. A Breakout specialist reviewed the shaft as an active buy and questioned the quantity ordered. The supply specialist at the requesting center was contacted. After researching the NSN, the requisitioner verified the wrong item had been ordered. Government cost avoidance = $706,440.

Beam, Aircraft, NSN 1560-01-317-7158. Original Equipment Manufacturer's quote was exorbitant on this NSN. Sacramento Air Logistics Center agreed to manufacture the item. Government savings of $528,380 resulted with an additional Production Lead Time (PLT) savings of $2,104.

Spacer, Plate, NSN 5365-01-152-7088. Two Commodity Business Unit personnel teamed up to initiate a study to identify and qualify additional manufacturing sources to support this high dollar, sole source item. The item was flight safety critical and required a lengthy production lead time. Working with the Engineering Support Activity, their combined efforts were successful with the approval of an additional source. This new source received the next award that produced a Government savings of $432,460 and 234 days in PLT.

Meals Ready to Eat (MRE) Ration Components. Eliminated components that caused total caloric content of MRE to exceed requirements. Government savings = $605,121.

Ejector, NSN 1560-00-829-4327. A contracting officer requested a Should Cost analysis and applied the results in contract negotiations resulting in a savings to the Government of $325,224.

Fairing, NSN 1560-01-070-2733. Qualified an additional source, which improved competition resulting in Government savings of $331,249.

VECPs Reports:

MRE Ration, Flameless Ration Heater. Contractor developed alternative design that not only reduced heater cost but also reduced weight, volume and water activating requirements. This change resulted in savings of $1,557,142 each for the Government and the contractor.

Sweater, Man's, Olive Drab, NSNs 8405-00-163-8905. A VECP was submitted by Jack Young Associates to utilize a 100% acrylic in lieu of the modacrylic or 100% wool specified for the above sweaters. This VECP was approved as a mandatory change and resulted in additional savings of $203,458.51 each to the Government and contractor. Savings were negotiated with the concurrent contract holder.

Tent, Frame Type, Expandable, NSN 8340-00-782-3425. A VECP was submitted by Anchor Industries to use an external becket loop assembly which would allow side grommets to be eliminated and the becket cord to be stitched directly to the becket flap for the frame type expandable tents. This VECP was approved as a mandatory change and has resulted in second year savings of $86,003.56 each to the Government and the contractor. Defense Contract Management Command (DCMC) personnel verified the savings.

Tent, Hexagonal, Lightweight, M-1950, NSN 8340-00-269-1374. A VECP was submitted by Outdoor Venture Corporation to use one-inch wide polypropylene webbing in lieu of low elongation webbing for the tent liners of the hexagonal tents. This VECP was approved as a mandatory change and has resulted in third year savings of $17,082.75 each to the Government and the contractor. The Government achieved three-year savings of $43,750.65 by approving this VECP. DCMC personnel verified the savings.

Tent Sections, Frame Type, Maintenance, Medium, Intermediate Section, NSN 8430-00-951-6425. A VECP was submitted by Outdoor Venture Corporation to redesign the tent section by replacing the purlin reinforcements with cotton webbing running lengthwise and using the free ends of the webbing, laced through the D-rings, to secure the intermediate section to the bottom frame. This VECP was approved as a mandatory change and has resulted in third year savings of $12,918.95 each to the Government and contractor. Total savings of $99,208.09 accrued to the Government during the three-year sharing period. Savings were verified by DCMC personnel.

Tent, Hexagonal, Lightweight, M-1950, NSN 8340-00-82-3425. A VECP was submitted by Outdoor Venture Corporation to reduce the lateral eave band reinforcement to permit the simultaneous attachment of the reinforcement band and webbing on the hexagonal tent. This VECP was approved as a mandatory change and has resulted in third year savings of $10,006.20. The Government achieved a three-year savings total of $25,571.40 from this approved VECP. Savings were verified by DCMC personnel.

Tent, Frame Type, Expandable, NSN 8340-00-782-3425. A VECP was submitted by Anchor Industries, Inc., to reduce the width of the eave, ridge and rafter reinforcement bands from eight inches to five inches on the frame type expandable tents. This VECP was approved as a mandatory change and has resulted in second year savings of $9,180.96 each to the Government and the contractor. Savings were verified by DCMC personnel.

Tent, General Purpose, Small, NSN 8340-00-543-7787. A VECP was submitted by Outdoor Venture Corporation to substitute cotton tape in lieu of the cotton low elongation webbing around the vent areas, and to shorten the vent reinforcement around the vent area when manufacturing this tent. The approval of this VECP resulted in third year savings of $8,150.31 each to the Government and the contractor. Total savings of $62,843.38 accrued to the Government over the three-year royalty sharing period. Savings were verified by DCMC personnel.

Tent, General Purpose, Medium, 8340-00-543-7787. A VECP was submitted by Outdoor Venture Corporation to attach reinforcement finishing 1-1/2” width in lieu of 3-1/2” width for the edges that join the side with the center portions of the end roof for the general purpose medium tent. This VECP was approved as a mandatory change and resulted in third year savings of $4,241.25 each to the Government and the contractor. Total savings of $259,138.13 accrued to the Government and the contractor.

Army

Antenna Simplification And Technology Insertion: The prime contractor for the Apache Longbow helicopter, Lockheed Martin Federal Systems (LMFS), was purchasing four different antenna components and then assembling and testing them. LMFS was using a group of components to limit the intermediate frequency signal and to develop the proportional log video response to the received power. LMFS was installing processor LRU components, which had a 15-year-old technology. The approved VECP reduced the assembly and testing; applied state-of-the-art technology to the receiver and processor LRUs; reduced the weight and power requirements; saved the Government $1,657,000; and earned additional profit for LMFS of $6,596,000 over the next seven years.

Mass Storage Expansion Unit Replacement: The FIREFINDER Radar Operation Central Shelter is used to coordinate communications. Subsequent to contract award to the Northrop Grumman Corporation (NGC), a VE workshop was conducted according to the requirements of the contract VE Program Requirement Clause. Participants included PM FIREFINDER, NGC design and production engineers, and soldiers from Ft. Sill. A VE workshop determined that the shelter's Mass Storage Expansion Unit could be replaced with a much less expensive CD-ROM unit. NGC submitted the recommended change in a VECP. The PM FIREFINDER approved the VECP and saved the Government $393,000 and earned NGC $393,000 in profit.

Recycled Depleted Uranium: The raw material for M919 depleted uranium (DU) penetrators was uranium hexafluoride (UF6) purchased from the U.S. Department of Energy. The UF6 was converted to uranium tetrafluoride (UF4) and then blended with magnesium to produce DU metal derbies, which were used in the DU casting process. A VE study identified another source of DU: recycled metal from the 105mm M833 DU APFSDS-T Cartridge demilitarization program at the Iowa Army Ammunition Plant. The large caliber penetrators could be melted and cast into billets to produce smaller caliber M919 25mm penetrators. A Value Engineering Proposal (VEP) has a positive environmental impact by eliminating the disposal of M833 DU penetrators at radiation burial waste sites. The Government will save approximately $5,000,000 in production and burial costs. Additionally, recycled DU penetrators have demonstrated improved penetration capability.

Replacement Of Target Drone: The MQM107 Drone was used as a target for the PATRIOT Missile System 18 times a year. Even though the attacking missiles were equipped with delay fusing mechanisms, the drone was hit and destroyed nine times a year on average. Each drone cost $287,000. A VE study, undertaken to identify more cost effective alternatives, determined that a representative target could be towed by the drone at a sufficient distance to prevent damage to the drone when the target was hit. The towing alternative was recommended for adoption in a VEP. The VEP was approved and implemented and the Government realizes $2,124,000 in cost avoidance savings annually.

Ballistic Missile Defense Organization

VEP results:

Power Supplies: The PATRIOT Project Office was modifying PATRIOT Shelters and intended to procure power supplies and furnish them as Government Furnished Equipment to the production contractor. The VEP evaluated the proposed method of procurement/acquisition of the required power supplies. The VEP recommended the repair of available power supplies from inventory instead of procuring new ones as originally planned. 3 year savings - $ 0.360 M, Total savings - $ 0.360 M.

Patriot Production Equipment: The U.S. Government is required to provide special equipment for training at the Logistics Center of Excellence, at Fort Bliss, Texas for the PATRIOT Return and Repair Program. This VEP recommended the use of excess tooling from inventory instead of procuring new equipment. 3 year savings - $ 6.013 M, Total savings - $ 6.013 M.

Single Board Computer: The PATRIOT Project Office was upgrading the Single Board Computer Circuit Card Assemblies for PATRIOT launchers and engagement control stations to provide for PATRIOT Advanced Capability-3 (PAC-3) interface. This VEP recommended the plan to buy and install piece parts to upgrade the existing boards instead of procuring new boards as originally scheduled. 3 year savings - $ 1.290 M, Total savings - $ 1.290 M.

THAAD Contracting Support: This VE study was initiated to analyze the optimum contractor support required during Engineering Manufacturing and Development (EMD) through Low Rate Initial Production (LRIP). The VEP had 3 year savings of $4.9M, and life cycle savings of an additional $15.3M.

THAAD Project Office Facilities: The THAAD Project Office was located in three separate cramped, costly, facilities. As a result of this VEP, a common facility was located. A $1.0M implementation cost resulted in VE savings of $1.025 in additional savings and life cycle savings of $2.7625M.

THAAD System Fuel Tanker: The THAAD launcher system configuration was costly due to the number of personnel required, number of vehicles as well as the number and frequency of re-supply actions. This VEP recommended an alternative tanker truck configuration with larger fuel capacity. As a result of this VEP the project office realized $0.105M in 3 year savings with an additional life cycle savings of $1.2M.

THAAD Dynamic Reference Unit (DRU): The DRU unit was determined to be costly. This VEP reviewed alternatives and recommended a lower cost alternative with improved functional capability. The project office realized $0.107M in 3 years savings and an additional life cycle savings of $0.2M.

Air Force

Top Contractor List with their VE activity

#	*Contractor*	*Number of VECPs Submitted/Approved*	*Net VE Award to Contractor*	*Net Savings to Air Force*
1	Lockheed Martin			
2	Boeing			
3	Northrop Grumman			
4	Raytheon	0/8	$15,839,859	$35,490,783
5	United Technologies			
6	General Electric			
7	TRW			
8	Massachusetts Inst. Of Tech.			
9	Aerospace			
10	Computer Sciences Corp			
11	Science Applications Intl.			
12	ITT			
13	Worldcorp			
14	Litton Industries			
15	GTE			
16	BDM			
17	Sverdrup			
18	DynCorp			
19	Tracor			
20	Allied-Signal			

Significant In-house VE projects:

Programt	***Number of VEPs***	***Estimated Cost Avoidance***
PRC-128 Radio Battery Assembly Repair	1	$4,784,622

Significant Contractor VE projects:

Program	***Project***	*Contractor Submitting VECP*	*Est. Contractor's Dollar Award*	*Est. Air Force Dollar Share*
Rocket Motor (AIM-120C):	AMRAAM Missile:	Raytheon	$1,045,882	$1,045,882
Antenna Servo Elect Enhancement:	AMRAAM Missile:	Raytheon	$884,412	$2,653,237
Control Section Electronics Enhancements:	AMRAAM Missile:	Raytheon	$3,646,774	$10,940,323
Transmitter ECU Enhancements:	AMRAAM Missile:	Raytheon	$884,412	$2,653,237
Range Correlator (AIM-120C):	AMRAAM Missile:	Raytheon	$3,469,798	$3,469,798